## CS-800

## Carbon / Sulfur Determinator

## **■ Specifications**

Low carbon Up to 0.1% C at 500mg sample resp. up to 0.5mg C1) High carbon Up to 5% C at 500mg sample resp. up to 25mg C 1) High carbon Up to 5% C at 500mg sample resp. up to 25mg C 1) High sulfur 30% S at 150mg sample resp. up to 45mg S1) Indicating range Up to 100% C2)  High sulfur 30% S at 150mg sample resp. up to 45mg S1) Indicating range up to 100% S2)  High sulfur 0.1 ppm C at 500mg sample resp. 0.05µg C  Sensitivity  Carbon 0.1 ppm C at 500mg sample resp. 0.05µg C  Low sulfur 0.1 ppm S at 500mg sample resp. 0.05µg S 1)  Low sulfur 0.1 ppm S at 500mg sample resp. 0.05µg S 1)  Low sulfur 0.1 ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur present  High carbon 1) ±10pm C 3) at 1gram sample resp. ±50 µg C or ±0.5% of this present  High sulfur 1) ±100pm C 3) at 500 mg sample resp. ±50 µg C or ±0.5% of this sulfur 1) ±100pm C 3) at 500 mg sample resp. ±150 µg S or ±0.5% of S present  Normal sample weight 0.5g to 1g for steel and cast iron  Normal analysis time 40 to 50 seconds  Furnace type Induction, 19.5 MHz 2.2 kVA max  Chemicals CO <sub>2</sub> Trap Sodium hydroxide H <sub>2</sub> O trap Magnesium perchlorate Catalyst copper oxide  Gas required Oxygen 99.5% pure, 2 to 4 bar (30 to 60 psi), 3 l/min  Interfaces Computer - serial 4)  Power requirements 230 V AC ±10% 50/60 Hz max 15 Amps 3450 Watts  Dimensions Width Height 55cm(21*) 80cm(31.5*)  Dimensions Width Height 55cm(21*) 80cm(31.5*)	MEASURING BANGES	
Up to 0.1% C at 500mg sample resp. up to 0.5mg C1)  High carbon Up to 5% C at 500mg sample resp. up to 25mg C 1)  High sulfur 30% S at 150mg sample resp. up to 45mg S1)  High sulfur 30% S at 150mg sample resp. up to 45mg S1)  Indicating range Up to 100% S2)  SENSITIVITY  Carbon 0.1 ppm C at 500mg sample resp. 0.05μg C  ACCURACY  Low carbon 1)  ±1ppm C 3) at 1gram sample resp. ±1 μg C or ±0.5% of arbon or present  High sulfur 0.1 ppm S at 500mg sample resp. 0.05μg S 1)  Low sulfur 1)  ±1ppm C 3) at 1gram sample resp. ±1 μg C or ±0.5% of arbon or present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur 1)  ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur 1)  ±1ppm S at 1gram	MEASURING RANGES	
Up to 5% C at 500mg sample resp. up to 25mg C 1) Indicating range Up to 100% C2)  SENSITIVITY  Carbon O, 1 ppm C at 500mg sample resp. 0.05μg C  Sulfur O,1 ppm S at 500mg sample resp. 0.05μg S 1)  ACCURACY  Low carbon 1) ±1 ppm C 31 at 1gram sample resp. ±1 μg C or ±0.5% of carbon present  High carbon 1) ±1 (ppm C 3) at 1gram sample resp. ±1 μg C or ±0.5% of carbon present  High carbon 1) ±100ppm C 3) at 500 mg sample resp. ±50 μg C or ±0.5% of present  High sulfur 1) ±100ppm C 3) at 500 mg sample resp. ±50 μg C or ±0.5% of present  Normal sample weight O.5g to 1g for steel and cast iron  Normal sample weight O.5g to 1g for steel and cast iron  Normal sample weight O.5g to 1g for steel and cast iron  Purace type Induction, 19.5 MHz 2.2 kVA max  Chemicals CO <sub>2</sub> Trap Sodium hydroxide H <sub>2</sub> O trap Magnesium perchlorate Catalyst copper oxide  Compressed air 4 to 6 bar (60 to 90 psi)  Interfaces Computer - serial 4)  Power requirements 230 V AC ±10% 50/60 Hz max 15 Amps 3450 Watts  Dimensions Width Height Depth 55cm(21") 80cm(31.5") 60cm(23.5")	<b>Low carbon</b> Up to 0.1% C at 500mg sample resp. up to 0.5mg C1)	
Carbon       Sulfur 0.1 ppm C at 500mg sample resp. 0.05μg C       Sulfur 0.1 ppm S at 500mg sample resp. 0.05μg S 1)         ACCURACY       Low carbon 1) ±1ppm C 3) at 1gram sample resp. ±1 μg C or ±0.5% of carbon present       Low sulfur 1) ±1ppm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present         High carbon 1) ±1 00ppm C 3) at 500 mg sample resp. ±50 μg C or ±0.5% of present       High sulfur 1) ±0.1% S at 150 mg sample resp. ±150 μg S or ±0.5% of S present         GENERAL SPECIFICATIONS       Normal analysis time 40 to 50 seconds         Normal sample weight 0.5g to 1g for steel and cast iron       Normal analysis time 40 to 50 seconds         Furnace type Induction, 19.5 MHz 2.2 kVA max       Furnace dust cleaning Automatic         Detection method Solid state infrared absorption for carbon and sulfur       Chemicals CO <sub>2</sub> Trap Sodium hydroxide H <sub>2</sub> O trap Magnesium perchlorate Catalyst copper oxide         Gas required Oxygen 99.5% pure, 2 to 4 bar (30 to 60 psi), 3 l/min       Compressed air 4 to 6 bar (60 to 90 psi)         Interfaces Computer - serial 4)       Power requirements 230 V AC ±10% 50/60 Hz max 15 Amps 3450 Watts         Weigths Analyzer: approx. 110 kg       Dimensions Width Height 55cm(21") 80cm(31.5") 60cm(23.5")	High carbon Up to 5% C at 500mg sample resp. up to 25mg C 1) Indicating range Up to 100% C2)	30% S at 150mg sample resp. up to 45mg S1)
0.1 ppm S at 500mg sample resp. 0.05μg C  ACCURACY  Low carbon 1) ±1ppm C 3) at 1gram sample resp. ±1 μg C or ±0.5% of carbon present  High carbon 1) ±10ppm C 3) at 500 mg sample resp. ±50 μg C or ±0.5% of present  High sulfur 1) ±100ppm C 3) at 500 mg sample resp. ±50 μg C or ±0.5% of present  High sulfur 1) ±100ppm C 3) at 500 mg sample resp. ±50 μg C or ±0.5% of present  High sulfur 1) ±100ppm C 3) at 500 mg sample resp. ±50 μg C or ±0.5% of present  High sulfur 1) ±10pm S at 1gram sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±100 μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of sulfur present  High sulfur 1) ±10pm S at 150 mg sample resp. ±1μg S or ±0.5% of S or ±0.	SENSITIVITY	
Low carbon 1) ±1ppm C 3) at 1gram sample resp. ±1 µg C or ±0.5% of carbon present  High carbon 1) ±100ppm C 3) at 500 mg sample resp. ±50 µg C or ±0.5% of present  High sulfur 1) ±100ppm C 3) at 500 mg sample resp. ±50 µg C or ±0.5% of present  High sulfur 1) ±10.1% S at 150 mg sample resp. ±150 µg S or ±0.5% of S present  Normal sample weight 0.5g to 1g for steel and cast iron  Furnace type Induction, 19.5 MHz 2.2 kVA max  Chemicals CO2 Trap Sodium hydroxide H20 trap Magnesium perchlorate Catalyst copper oxide  Compressed air 4 to 6 bar (60 to 90 psi)  Interfaces Computer - serial 4)  Chemicals CO2 Trap Sodium hydroxide H20 trap Magnesium perchlorate Catalyst copper oxide  Compressed air 4 to 6 bar (60 to 90 psi)  Dimensions Width Height Depth 55cm(21") 80cm(31.5") 60cm(23.5")	Carbon 0.1 ppm C at 500mg sample resp. 0.05µg C	
#1ppm C 3) at 1gram sample resp. ±1 µg C or ±0.5% of carbon present  #1ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur present  #1ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur present  #1ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur present  #1ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur 1) ±100ppm C 3) at 500 mg sample resp. ±50 µg C or ±0.5% of S present  #1ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur 1) ±100ppm C 3) at 500 mg sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur 1) ±10.1% S at 150 mg sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur 1) ±10.1% S at 150 mg sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur 1) ±10.1% S at 150 mg sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur 1) ±10.1% S at 150 mg sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur 1) ±10.1% S at 150 mg sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram 2 present  #1ppm S at 1gram sample resp. ±150 µg S or ±0.5% of S present  #1ppm S at 1gram 2	ACCURACY	
±100ppm C 3) at 500 mg sample resp. ±50 μg C or ±0.5% of ±0.1% S at 150 mg sample resp. ±150 μg S or ±0.5% of S present    Variable	Low carbon 1) ±1ppm C 3) at 1gram sample resp. ±1 μg C or ±0.5% of carbon present	±1ppm S at 1gram sample resp. ±1µg S or ±0.5% of sulfur
Normal sample weight 0.5g to 1g for steel and cast iron  Furnace type Induction, 19.5 MHz 2.2 kVA max  Furnace dust cleaning Automatic  Chemicals CO <sub>2</sub> Trap Sodium hydroxide H <sub>2</sub> O trap Magnesium perchlorate Catalyst copper oxide  Gas required Oxygen 99.5% pure, 2 to 4 bar (30 to 60 psi), 3 l/min  Interfaces Computer - serial 4)  Computer - serial 4)  Power requirements 230 V AC ±10% 50/60 Hz max 15 Amps 3450 Watts  Dimensions Width Height Depth 55cm(21") 80cm(31.5") 60cm(23.5")	High carbon 1) ±100ppm C 3) at 500 mg sample resp. ±50 μg C or ±0.5% o C present	f ±0.1% S at 150 mg sample resp. ±150 μg S or ±0.5% of S
Furnace type Induction, 19.5 MHz 2.2 kVA max  Petection method Solid state infrared absorption for carbon and sulfur  Gas required Oxygen 99.5% pure, 2 to 4 bar (30 to 60 psi), 3 l/min  Interfaces Computer - serial 4)  Power requirements 230 V AC ±10% 50/60 Hz max 15 Amps 3450 Watts  Pimensions Weigths Analyzer: approx. 110 kg  Moderate Automatic  Chemicals CO2 Trap Sodium hydroxide CO2 Trap Sodium hydroxide H2O trap Magnesium perchlorate Catalyst copper oxide  Compressed air 4 to 6 bar (60 to 90 psi)  Dimensions Width Height Depth 55cm(21") 80cm(31.5") 60cm(23.5")	GENERAL SPECIFICATIONS	
Automatic  Detection method Solid state infrared absorption for carbon and sulfur  Catalyst copper oxide  Compressed air 4 to 6 bar (60 to 90 psi)  Detection method Solid state infrared absorption for carbon and sulfur  Catalyst copper oxide  Compressed air 4 to 6 bar (60 to 90 psi)  Power requirements 230 V AC ±10% 50/60 Hz max 15 Amps 3450 Watts  Dimensions Width Height Depth 55cm(21") 80cm(31.5") 60cm(23.5")	Normal sample weight 0.5g to 1g for steel and cast iron	
Detection method Solid state infrared absorption for carbon and sulfur  CO2 Trap Sodium hydroxide H2O trap Magnesium perchlorate Catalyst copper oxide  Compressed air 4 to 6 bar (60 to 90 psi)  Interfaces Computer - serial 4)  Power requirements 230 V AC ±10% 50/60 Hz max 15 Amps 3450 Watts  Dimensions Weigths Analyzer: approx. 110 kg  Dimensions Width Height Depth 55cm(21") 80cm(31.5") 60cm(23.5")	Furnace type Induction, 19.5 MHz 2.2 kVA max	
Oxygen 99.5% pure, 2 to 4 bar (30 to 60 psi), 3 l/min  Interfaces Computer - serial 4)  Power requirements 230 V AC ±10% 50/60 Hz max 15 Amps 3450 Watts  Dimensions Width Height Depth 55cm(21") 80cm(31.5") 60cm(23.5")  ACCESSORIES	Detection method Solid state infrared absorption for carbon and sulfur	CO <sub>2</sub> Trap Sodium hydroxide H <sub>2</sub> O trap Magnesium perchlorate
Computer - serial 4)  230 V AC ±10% 50/60 Hz max 15 Amps 3450 Watts  Weigths Analyzer: approx. 110 kg  Dimensions Width Height Depth 55cm(21") 80cm(31.5") 60cm(23.5")  ACCESSORIES	Gas required Oxygen 99.5% pure, 2 to 4 bar (30 to 60 psi), 3 l/min	
Analyzer: approx. 110 kg  Width Height Depth 55cm(21") 80cm(31.5") 60cm(23.5")  ACCESSORIES	Interfaces Computer - serial 4)	
	<b>Weigths</b> Analyzer: approx. 110 kg	Width Height Depth
Balance: 0.0001g to 60 g ±0.0001	ACCESSORIES	
	Balance: 0.0001g to 60 g ±0.0001	

Computer: Pentium PC with HDD, 3.5" drive, CD-ROM, color monitor and keyboard

Color printer with automatic cut sheet feed, other options on request

<sup>1)</sup> Other ranges on request. 2) Possible by reducing the sample weight. 3) With preheated crucibles and oxygen purification furnace. 4) Balance (serial - RS232) and printer (USB, parallel) are connected to the PC.